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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,020	02/20/2004	Stephen B. Siegel	6987-90555	7154
24628	7590	02/01/2005	EXAMINER	
WELSH & KATZ, LTD 120 S RIVERSIDE PLAZA 22ND FLOOR CHICAGO, IL 60606			PADGETT, MARIANNE L	
			ART UNIT	PAPER NUMBER
			1762	

DATE MAILED: 02/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/789,020	SIEGEL, STEPHEN B.
	Examiner	Art Unit
	Marianne L. Padgett	1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-24 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____.

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1). Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Use of abbreviations or acronyms, in claims without first writing out the terms in full at the beginning of the claim sequences is improper, because it may cause uncertainty or confusion, especially when there are multiple possible meanings, as in LED (light emitting D=device or diode), which has two possible meanings known to the examiner and of different scopes.

2). The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3). Claims 1-6, 8, 10, 13-18, 20 and 22 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 6, 14, 16, 21, 29, 34-39 of copending Application No. 10/753,947. Although the conflicting claims are not identical, they are not patentably distinct from each other because these two sets of claims mix orders and have overlapping scopes of printing/coating with inks or coating or adhesives, movements of both LED curing arrays and products in obvious variations on a general theme. For example the (947) case has some independent claims limited to 180-420 nm for the UV-LED, others just to UV LED's in general, while this case (020) always claims the broader range. The (947) case may treat inks, coating or adhesives while this case (020) only deals with printed inks.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4). Claims 1-9 and 13-21 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-5, 7-9, 11-14, 16-18, 21, 23-27 and 29-33 of copending Application No. 10/386,980. Although the conflicting claims are not identical, they are not patentably distinct from each other because these 2 sets of claims have overlapping scopes, where the present claim are to curable ink printed from a printing head, but the (980) case may also be an ink, where it would have been obvious to one of ordinary skill to deposit the claimed ink by conventional means, i.e. via a printing head, as it is an expected means of applying ink. The present case claims staggered LED's in arrays, as

does the (980) case, but its greater detail encompasses the present claim entirely. Both cases have varying claims on relative motion of substrates, LED arrays, etc., such that these are obvious variations.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5). Claims 1-10 and 13-22 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8, 17-28, 37-38, 40-43 and 46-47 of copending Application No. 10/339,264 in view of Young or Biegelsen, discussed below. While not identical, these claims contain overlapped sets of limitation for configurations, movements, material treated, where for example both may use staggered arrangements of UV-LED and desire uniform application of UV, although the (264) case claims mostly geometrical arrangements to stagger and distribute the LEDs. This case (020) merely says they are staggered so is encompassed thereby. It would have been obvious to place the LEDs in any equidistant arrangement, in order to effect uniform light distribution, because if you don't and clump them too much, the light as it spreads out with distance will not be able to average over the clumping effect. This is just common sense use of basic optics. The 264 case's specification of a specific number of arrays or rows, is a further obvious variation, where number would have been chosen according to size or area needed to be exposed, and size of individual LED sources, and encompasses the broader present claims.

The (264) claims different by require the objects/substrates be in or on a web, while this case (020) does not specify or is more general, but is more specific than the (264) in specifying printing ink from a print head, however the (264) case also list ink as a possible curable material

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for use/treatment, and such is typically applied via print heads on web material, or alternately Young or Biegelsen et al, both of whom teach LED arrays, to cure in applied arrays via what may be a print head, supply motivation for this narrower obvious variation.

This is a provisional obviousness-type double patenting rejection.

6). Claims 1-5 and 13-17 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Young (6,561,640 B1).

Claims 6-12 and 18-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Young.

In Young, see the abstract; figures; col. 2, lines 29-65; col. 3, lines 45-col. 4, line 65; col. 5, line 60 – col. 6, line 63; col. 7 lines 8-67<sup>+</sup>; col. 8, line 44-col. 9, line 15; and claims, especially 1, 13-14 and 17-22. Note relative motion illustrated in Figures, as well as the various options, such as on col. 8, lines 25-32, where both the applicator and LED subsystems (120, 140) may be attached to a moving carriage system.

Young teaches UV curing where UV curable substances (such as 4 or more colors of ink, each with different photoinitiators and cured by different wavelength ranges) are first partially cured, then completely cured. The sequential cure is preformed by moving the substrate relative to spaced apart curing stations, which may employ UV light emitting devices that may be arrays of diodes, with different wavelengths suggested for the selective cure of the different substances deposited (inks), where the UV emitting devices may additionally include UV lamps.

Young does not teach any particular pattern for their array of multiple wavelengths, nor any specific wavelengths, but the wavelengths employed are taught to be chosen according to that needed to cured the particular substances being treated, therefore it would have been obvious

to one of ordinary skill in the art that the taught use of multiple UV wavelengths would have included those as claimed when the particular inks and photoinitiators employed were sensitive to the claimed wavelengths. Note as applicant's claims are generic to any curable ink, with no particular sensitivity, but use photoinitiators analogous to Young's procedure. As noted, Young teaches the use of LED's capable of separate emission of different wavelengths, and of arrays. They further teach properly selecting operating parameters to control the effectiveness of the curing, by manipulating power, intensity, direction, etc (col. 7, esp. lines 15-22), hence it would have been obvious to one of ordinary skill to arrange their multiple wavelengths to effectively distribute the light from the individual diodes in the array, in order to archive the taught curing. As arrays are typically composed of rows, and even distribution is commonly achieved by alternating the objects that emit different values of what is being distributed, i.e. the different wavelength emitting diodes, alternation by row or by place in a row or a combination thereof, would have been an obvious and standard means of achieving the teachings by physically dispersing the sources of the wavelengths. Staggering of the positions of the diodes in successive rows, would further the even distribution of light, by further reducing clustering or grouping of emissions.

While emission of constant intensity from the LED array that Young may use is not discussed nor for other light sources, in col. 4, lines 20<sup>+</sup>, use of various light sources, as well as control of the various intensities and times of the emitted light is taught. In order to have the taught control and to have reproducible results, it would have been obvious to one of ordinary skill in the art to ensure that the output of the LED is constant as the substrates pass beneath, or the taught control would be meaningless.

Given above discussion of multiple wavelengths and partial or 2 stage curing, plus teaching of alternate light sources, such as lamps, it would have been obvious for those alternate sources to be in visible (fluorescent lamp) or IR spectra, in order to effect different curing regimes or initiators as taught.

7). Biegelsen et al (6,536,889 B1) is substantially similar to Young, and may be considered substantially equivalent for the claims. Biegelsen teach deposition of plural materials, each with 2 photoinitiators that induce curing at different wavelengths, with teachings of successively curing at those wavelengths. UV curing sources are taught to include arrays of LEDs, and the substrate is moved relative to the applicator and light subsystem. See the abstract; figures, esp. 4; col. 2, lines 30-63; col. 3, lines 20-29; col. 4, lines 10-37<sup>+</sup>; col. 5, line 1 – col. 6, line 49; col. 8, lines 1-23<sup>+</sup>; and col. 9, line 24-col. 10, line 15.

While Biegelsen et al do not teach any specific arrangement for their arrays of diodes and plural wavelengths, successively applied, it would have been obvious to one of ordinary skill in the art that in order to achieve the taught successive treatments in Figure 4, described on col. 9-10, when using a diode array, that rows of diodes with the successively applied wavelengths would have been an effective and practical way of achieving the taught steps.

8). Other art of interest for UV-LED arrays include Dowling (2002/0074559 A1), Jin et al (2002/0016378) or Ollett et al (2004/0090794 A1) or Bhat et al (2001/0032985 A1) and Ostler et al (2001/0046652 A).

9). Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on Monday-Friday from about 8:30 AM to 4:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beck Shrive can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Padgett/LR  
January 21, 2005  
January 31, 2005



**MARIANNE PADGETT**  
**PRIMARY EXAMINER**